NichTek®

MOSFET

RoHS Compliant

MSLQ46N03T1-N

30V N-channel MOSFET

DFN3030-8L Package

Maximum Rating & Characteristic

Maximum Ratings (Ta=25°C unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D[1]	Continuous Drain Current @T_A= 25°C	46	A
	Continuous Drain Current @T_A= 100°C	28	A
I_{DM}[2]	Pulsed Drain Current	90	A
E_{AS}[3]	Single Pulse Avalanche Energy	45	mJ
I_{AS}	Avalanche Current	30	A
P_D[4]	Power Dissipation@T_A= 25°C	30	W
T_J	Operating Junction Temperature Range	–55 ~ +150	°C
T_{STG}	Storage Temperature Range	–55 ~ +150	°C
$R_{\theta JA}$[1]	Thermal Resistance from Junction-to-Ambient	72	°C/W
$R_{\theta JC}$[1]	Thermal Resistance from Junction-to-Case	4.16	°C/W

Electrical Characteristics (Ta=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	Drain to Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1	1.7	2.5	V
I_{GSS}	Gate to Source Leakage Current	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
I_{DSS}	Drain to Source Leakage Current	V_{DS} = 30V, V_{GS} = 0V			1	uA
		V_{DS} = 30V, V_{GS} = 0V, T_J = 55°C			5	
$R_{DS(ON)}$	StaÃc Drain-Source On-Resistance	V_{GS} = 10V, I_D =15A		6.8	8.5	mΩ
		V_{GS} = 4.5V, I_D = 10A		9	13	
g_{fs}	Forward Transconductance	V_{DS} = 5V, I_D = 15A		10		S
Q_g	Total Gate Charge	V_{GS} = 4.5V,V_{DS} = 20V, I_D= 12A		13.8		nC
Q_{gs}	Gate-Source Charge			3.6		
Q_{gd}	Gate-Drain Charge			7		
R_g	Gate Resistance	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		2.2		Ω
Dynamic Characteristics**						
C_{iss}	Input Capacitance	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz		1105		pF
C_{oss}	Output Capacitance			178		
C_{rss}	Reverse Transfer Capacitance			111		
Switching Characteristics**						
$t_{d(on)}$	Turn-On Delay Time	V_{GS} =10V, V_{DD} = 12V, R_G = 3.3Ω, I_D= 5A		5.2		ns
t_r	Rise Time			12		
$t_{d(off)}$	Turn-Off Delay Time			27		
t_f	Fall-Time			10		
Source-Drain Diode						
V_{SD}[2]	Forward On Voltage	I_S = 1A, V_{GS} = 0V			1	V
I_S[1,5]	Continuous Source Current	V_G=V_D= 0V , Force Current			46	A

Note:
1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
3.The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=30A
4.The power dissipation is limited by 150°C junction temperature
5.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.